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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/527,711	10/03/2005	Akikazu Matsumoto	12480-000106/US	5301
36593 7590 12/23/2008 HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 8910 RESTON, VA 20195				
EXAMINER				
LEE, DORIS L				
ART UNIT		PAPER NUMBER		
1796				
MAIL DATE		DELIVERY MODE		
12/23/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/527,711

Applicant(s)

MATSUMOTO ET AL.

Examiner

Doris L. Lee

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 1-5, 10-12, 18 and 19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-9, 13-17 and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 20050311, 20080505
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group II, claims 6-9, 13-17 and 20 in the reply filed on October 24, 2008 is acknowledged. Claims 1-5, 10-12 and 18-19 are withdrawn from further consideration as being drawn to a nonelected invention. The requirement is deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claim 6** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Matsumoto et al, *Nature*, vol. 405, May 18, 2000, pages 328-330** in view of **Kotelnikova et al, *Cellulose Chem. Technol.*, 36, 5-6, 445-458 (2002)**.

Regarding claim 6, Matsumoto teaches an organic polymer having a lamellar crystalline structure having an acidic group (page 328), it also teaches that the polymer is intercalated with alkylamines (page 328), however it fails to teach a method for producing a polymer with dispersed fine particles in which metal fine particles are dispersed in an organic polymer.

Kotelnikova teaches a crystalline polymer matrix made of cellulose (Abstract) in which fine metal particles are dispersed via the following method:

The crystalline polymer is mixed with a substance containing the metal ion and then the metal ion is reduced to obtain the fine metal particles (page 447, Experimental, Materials and procedure section).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the process as taught by Kotelnikova and apply it to the composition of Matsumoto. One would have been motivated to do so in order to make the polymer of Matsumoto exhibit electric and/or magnetic properties (page 445, paragraph 1). They are combinable because they are concerned with the same field of endeavor, namely crystalline polymers with intercalated materials.

Regarding claim 9, Matsumoto teaches that the polymer is a polymer of a diene having a carboxylic group (page 329).

Regarding claim 13, Matsumoto teaches a polymer having a lamellar crystalline structure having an acidic group (page 328), it also teaches that the polymer is intercalated with alkylamines (page 328), however it fails to teach a method for producing a polymer with dispersed fine particles in which metal fine particles are dispersed in an organic polymer.

Kotelnikova teaches a crystalline polymer matrix made of cellulose (Abstract) in which fine metal particles are dispersed via the following method:

The crystalline polymer is mixed with a substance containing the metal ion (page 447, Experimental, Materials and procedure section).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the process as taught by Kotelnikova and apply it to the

composition of Matsumoto. One would have been motivated to do so in order to make the polymer of Matsumoto exhibit electric and/or magnetic properties (page 445, paragraph 1). They are combinable because they are concerned with the same field of endeavor, namely crystalline polymers with intercalated materials.

Regarding claim 15, modified Matsumoto teaches that the step of mixing is conducted by impregnating or dispersing said crystalline organic polymer in the solution containing said substance containing the metal ion (Kotelnikova, page 447, Experimental, Materials and procedure section).

4. **Claim 7** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Matsumoto et al, *Nature*, vol. 405, May 18, 2000, pages 328-330** in view of **Kotelnikova et al, *Cellulose Chem. Technol.*, 36, 5-6, 445-458 (2002)** and **Won et al (JP 2002-179931, please refer to the machine translation for the references)**

The discussion regarding Matsumoto and Kotelnikova in paragraph 3 above is incorporated here by reference.

Regarding claim 7, modified Matsumoto teaches that silver ions are directly reduced (Kotelnikova, page 447) and indicates that different reduction methods may be tried (Kotelnikova, page 447), however, does not teach that the reduction can be by photoreduction.

Won teaches a polymer matrix ([0001]) in which silver is incorporated ([0015]) and is reduced by photo irradiation ([0014]).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to reduce the silver by photoreduction as taught by Won during the

process as taught by modified Matsumoto. As these two methods both reduce silver ions in the matrix of a polymer, it is a simple substitution of one known element for another to obtain predictable results. *KSR v. Teleflex*, 550 U.S. __, 82 USPQ2d 1385 (2007).

Regarding claim 8, modified Matsumoto teaches modified Matsumoto teaches that metal ions are directly reduced by a reducing agent (Kotelnikova, page 447), and modified Matsumoto teaches that different metals can be used such as silver, copper, nickel, etc (Kotelnikova, page 446, line 6) however, it fails to teach that the metal ions are platinum.

Won teaches a polymer matrix ([0001]) in which silver, copper, gold or platinum ([0015]) is incorporated ([0015]) into the metal matrix.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the platinum as taught by Won to replace the silver in the composition of modified Matsumoto. As these two metals are comparable as indicated by Won [0015]), it is a simple substitution of one known element for another to obtain predictable results. *KSR v. Teleflex*, 550 U.S. __, 82 USPQ2d 1385 (2007).

5. Claims 13-17 and 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Matsumoto et al**, *Nature*, vol. 405, May 18, 2000, pages 328-330 in view of **Seita et al** (US 2004/0072015).

Regarding claims 13-17 and 20, Matsumoto teaches an organic polymer having a lamellar crystalline structure having an acidic group (page 328), it also teaches that the polymer is intercalated with alkylamines (page 328), however it fails to teach a

method for producing a polymer with dispersed fine particles in which metal fine particles are dispersed in an organic polymer as recited in claims 13-17 and 20.

Seita teaches a polymer which is not limited in any manner ([0012]) in which metal ions, such as silver nanoparticles are incorporated ([0006]), first, by immersing it in potassium hydroxide and then ion exchanging in a solution of silver nitrate (Table 5).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the process as taught by Seita and apply it to the composition of Matsumoto. One would have been motivated to do so in order to make the polymer of Matsumoto exhibit electric properties ([0002]). They are combinable because they are concerned with the same field of endeavor, namely crystalline polymers with intercalated materials.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Doris L. Lee whose telephone number is (571)270-3872. The examiner can normally be reached on Monday - Thursday 7:30 am to 5 pm and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571)272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Doris L Lee/
Examiner, Art Unit 1796

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1796